

# **KOCSEA** *Symposium 2008*



**KOCSEA Technical Symposium**  
October 25th - 26th, 2008  
KUSCO Center Building, Vienna, VA

## About KOCSEA

The **K**Orean **C**omputer **S**cientists and **E**ngineers **A**ssociation in America (**KOCSEA**), founded in 1983, is a non-profit organization of Korean American computer scientists and engineers in the United States. The purpose of KOCSEA is to promote communication, information exchange and cooperation among its members and to provide opportunities for them to make contributions to computer science and related fields in Korea and U.S.

KOCSEA consists of about 500 members at various stages in their career - from undergraduate and graduate students, to young professionals and assistant professors, to senior executives and professors. KOCSEA has organized annual workshops in Korea in cooperation with Korean Information Science Society (KISS) from 1990 to 1995 in various areas of information technologies, including software engineering, multimedia technology, end user computing technology, and network technology. Recently, KOCSEA members have been actively participating in various technical activities promoting collaboration between US and Korea such as organizing symposiums at UKC (US Korea Conference on Science, Technology, and Entrepreneurship) of KSEA (Korea-American Scientists and Engineers Association), serving on the project proposal review panels of KOSEF (Korea Science and Engineering Foundation), and producing research trend study reports sponsored by KOSEF and KSEA in the area of computer and communications.



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## About KOCSEA SYMPOSIUM

The organizing committee is pleased to announce the KOCSEA (Korean Computer Scientists and Engineers Association in America) Technical Symposium 2008 to be held during October 25-26, 2008 at KUSCO Head Quarter in Vienna, VA

The invited speakers of the symposium will comprise top Korean talents in Computer Science and Engineering, who are active in Academia and Industry in the US and Korea.

The 1.5 day symposium will provide a forum for presenting recent technical advances, exchanging innovative ideas, and fostering collaborations among participants creating new opportunities for collaborative research. The single-track symposium will comprise keynote speech, invited talks, poster sessions, and KOCSEA business meeting.



## Congratulatory Remarks

Dear President Jihie Kim and Members of KOCSEA, Keynote Speakers, Invited Speakers, Distinguished Scholars, Professionals, Ladies and Gentlemen!

It is a great honor and pleasure for me to present this congratulatory remark on the occasion of the 9<sup>th</sup> KOCSEA Technical Symposium to be held from October 25<sup>th</sup> to 26<sup>th</sup> 2008 at the KUSCO building. Although I regret very much that I am unable to attend the symposium in person my heartfelt congratulations and best wishes are with the symposium as well as those who are participating.

This year's symposium is more significant than others since KOCSEA is celebrating its Silver Anniversary this year. For the past 25 years KOCSEA has grown tremendously and contributed to the advancement of Computer Science and Engineering both in the States and Korea. As one of the former presidents of KOCSEA I would like to express my sincere gratitude to the current and former presidents, staffs and members of KOCSEA for their endless efforts to make KOCSEA one of the leading Korean-American professional societies in the United States of America. It is my sincere hope that this symposium will set a milestone for KOCSEA to collaborate with other similar societies in the world to organize an international conference in the future.

As you all know we live in an era of globalization. Although there are political borders among the nations, there are no national borders in science & engineering. We, the scientists & engineers should strive together to promote advances in science & engineering for the betterment of human beings in the world.

To achieve this goal it is very important to have international collaborations. In closing I would like to express my sincere thanks to President Jihie Kim and organizing committee members for their hard working to prepare this symposium. Proper thanks are also due to the sponsoring organizations.

Congratulations once again and best wishes for a successful and fruitful symposium.

Sincerely Yours,  
Chan-Mo Park  
Professor Emeritus (Former President) of POSTECH  
Special Advisor to the President of Korea for Science & Technology



## Message from General Symposium Chair

The Korean Computer Scientists and Engineers Association in America (KOCSEA), founded in 1983, is a non-profit organization of Korean and Korean American computer scientists and engineers in North America. The basic goal of KOCSEA is to "promote communication, information exchange and cooperation among its members and to provide opportunities for them to make contributions to computer-related fields in Korea and U.S." Currently KOCSEA has hundreds of members and patrons in the academia and in the industry, who are the leading researchers and practitioners in the Computer Science and Engineering, and the Information Science fields.

It is our pleasure to invite you to the 9th KOCSEA (Korean Computer Scientists and Engineers Association in America) Technical Symposium, to be held at the KUSCO (Korea-US Science Cooperation Center) building, Vienna, VA from October 25th to 26th, 2008. The symposium is co-organized by KOCSEA and KUSCO, and sponsored by KUSCO, KT Corporation, and KSEA (Korean-American Scientists and Engineers Association).

This symposium is a continuation of the joint workshops with KISS (Korean Information Science Society) initiated during 1990 – 1995 (held in Korea). These workshops have contributed in culturing collaborations between the researchers in US and Korea. Most recently, the 7th and the 8th KOCSEA Technical Symposium were held at the Arizona State University and the University of Southern California, respectively. The events from the last two KOCSEA symposiums contributed a lot in nurturing collaborative relations among leading IT industries and research labs in both Korea and US and presenting opportunities for joint research and exchange of scholarly ideas. In addition to the research talks, we discussed potential approaches to promote cooperation among US and Korean researchers in different regions and venues for information exchange.

The planned one-and-half day workshop consists of invited talks by outstanding researchers and professors in various fields in IT, as well as panel sessions that will discuss the cooperation issues and solutions. Based on our success of the last two workshops, we hope to further increase the opportunities for meaningful research collaborations between academicians and professionals in US and Korea in the field of Computer and Information Science through this workshop. In particular, this year we will promote more participation of researchers in Washington DC area.

Your participation is particularly important, as one of our goals is to culture collaborations between the researchers in US and Korea. Also, the event will provide an opportunity for your group to share your latest technological advances and experiences, and to interact with senior and junior members from the academia and other industrial partners.

So, hereby we cordially invite you and others from your group to the technical symposium.

Sincerely yours,

Jihie Kim, Ph.D.  
President of KOCSEA  
<http://www.kocsea.net>

## Symposium Organizers

### General Chair

Prof. Jihie Kim (University of Southern California), KOCSEA President, jihie@isi.edu, (310) 448-8769

### Program Chair

Prof. Byung Kyu Choi (Michigan Tech) bkchoi@mtu.edu

### Co-Chairs

Dr. Jong-Hyun Rhie, (KSUCO), KUSCO Director, jhlee@kosef.re.kr

Dr. Taek Jin Kwon (Telcordia) tkwon@research.telcordia.com

Prof. Yoonsuck Choe (Texas A&M University) choe@tamu.edu

### Registration Chairs

Prof. Yoohwan Kim (University of Nevada, Las Vegas) yoohwan@cs.unlv.edu

### Local Arrangement Chairs

Prof. Kyungll Yoon (College of Notre Dame of Maryland) kyoons@ndm.edu

Dr. Dong-In Kang (USC/Information Sciences Institute) dkang@east.isi.edu

Dr. Anya Kim (Naval Research Lab) anya@itd.nrl.navy.mil

### Student Affairs Chair

Prof. Jungwoo Ryoo (Penn State University, Altoona) jryoo@psu.edu

### Publication Chairs

Prof. EunYoung Kang (California State University, Los Angeles) eykang@exchange.calstate.edu

Dr. Bongjun Ko (IBM Research) bongjun\_ko@us.ibm.com

Prof. Jongwook Woo (California State U, LA, jwoo5@calstatela.edu)

### Panel Chairs

Dr. Kang-Won Lee (IBM Research) kangwon@us.ibm.com

Dr. Kyung Dong Ryu (IBM Research) kryu@us.ibm.com

Prof. Sang Hyuk Son (University of Virginia) son@cs.virginia.edu

### Advisory Chairs

Prof. Kane Kim (University of California, Irvine) khkim@uci.edu

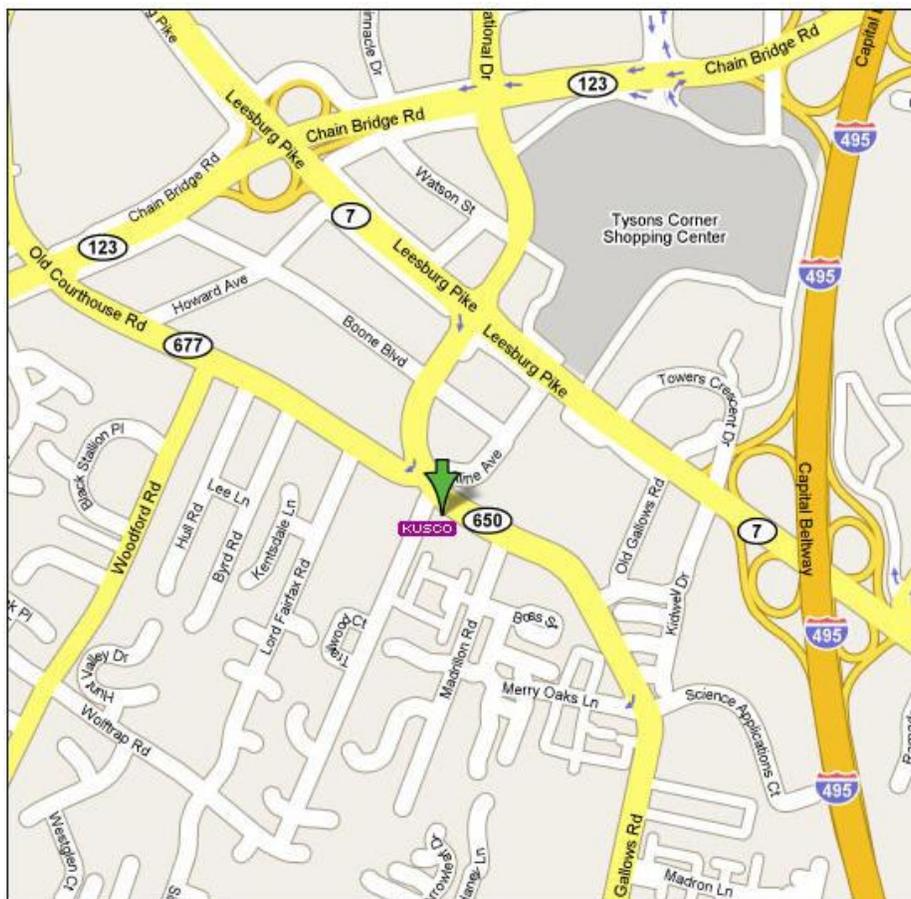
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## KUSCO building, Vienna, VA

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### Direction to KUSCO Building (from Dulles international Airport)

1. Head east on Saarinen Circle 0.2 mi
2. Slight left at Dulles Access Rd E/Hirst Brault Expy E (signs for Washington) 11.1 mi
3. Take the Leesburg Pike/State Hwy 7 exit toward Tysons Corner/Leesburg 0.6 mi
4. Keep right at the fork, follow signs for Tysons Corner/VA-7 E and merge onto Leesburg Pike/VA-7 1.6 mi
5. Turn right at Gallows Rd , Destination will be on the right 0.3 mi

## Program and Event

### October 25, 2008 (Saturday)

Date	Time	Program
Oct. 26 Sunday	08:15am- 08:45am	Registration and Breakfast
	08:45am- 09:00am	Opening Remark Jihie Kim (U. of Southern California) Jong-Hyun Rhie (KUSCO Director)
	09:00am- 09:45am	Keynote Speech 1 Moderator: Se J. Hong (IBM) <ul style="list-style-type: none"> <li>SangHyuk Son (U. of Virginia), Data Integration for Situation Awareness</li> </ul>
	09:45am- 10:45am	Invited Talk 1 - Networks Moderator: Byung K. Choi (Michigan Technological Univ.) 1.Hyeong-Ah Choi (George Washington Univ.), "Resource Management in Next Generation Wireless and Mobile Networks" 2.Kang-won Lee (IBM), "Networking Research in the International Technology Alliance: Enabling Accurate Node Control in Randomized Duty Cycling Networks" 3.TaekJin Kwon (Telecordia), " Data dissemination in vehicular communication networks (VANET)"
	10:45am- 11:00am	Coffee Break
	11:00am- 12:20pm	Invited Talk 2 - Database Systems and Software Engineering Moderator: Yoohwan Kim (Univ. of Nevada, Las Vegas) 1. Soon M Chung (Write State Univ.), "Role-Based Access Control for Grid Database Services Using the Community Authorization Service" 2. Dongwon Lee (Penn State Univ.), "Novel Data Linkage Techniques" 3. Eunjee Song (Baylor Univ.), "A Rigorous Approach to Incorporating Access Control Features into Applications" 4. Young B. Choi (James Madison Univ.), "Homeland Security: The Past, Present, and Future Trends"
	12:20pm- 01:30pm	Lunch
	01:30pm- 03:10pm	Special Invited talks on Funding Opportunities and Research Skills Moderator: Yoonsuck Choe (Texas A&M) <ul style="list-style-type: none"> <li>Doug Fisher (National Science Foundation), "An Overview of Selected Programs at the National Science Foundation"</li> <li>InTark Han (ETRI), "A proposal for R&amp;D cooperation between KOCSEA and ETRI - a process for collaborative project"</li> <li>Marie desJardin (Univ. of Maryland, Baltimore County), "Presenting Your Research: Papers, Presentations, and People"</li> <li>Q/A</li> </ul>
	03:10pm- 03:25pm	Coffee Break
	03:25pm-	Invited Talk 3 - Architecture

04:45pm	<p>Moderator: EunYoung Kang (California State Univ. LA)</p> <ol style="list-style-type: none"> <li>1. Jeff Hollingsworth (Univ. of Maryland, College Park), "Towards Automated Tuning of Parallel Programs"</li> <li>2. Anya Kim (Naval Research Lab), "An Architecture for Web Services Authentication and Authorization in a Maritime Environment"</li> <li>3. Dong-In Kang (ISI-East, U. of Southern California), "Intelligent Run-time Resource Management Techniques for Large Multi-Core Architectures"</li> <li>4. BongJun Ko (IBM), "Blind Estimation of Transmit-Power in Wireless Networks"</li> </ol>
04:45pm-06:00pm	<p>Poster session (Research Poster presentations and Student Poster Award)</p> <ul style="list-style-type: none"> <li>• Yoonsuck Choe (Texas A&amp;M), "Internal State Predictability as an Evolutionary Precursor of Self-Awareness and Agency"</li> <li>• Byung Choi (Michigan Tech. Univ.), "Dynamic Membership Protocol for Epidemic Protocols"</li> <li>• Eun-Young Kang (Cal State LA), "Integrated Training Pipeline for Scientific Visualization"</li> <li>• Jihie Kim (USC), "Sentiment Analysis of a Student Q&amp;A Board for Computer Science"</li> <li>• Seon Ho Kim (Univ. of the District of Columbia), "Viewable Scene Modeling for Geospatial Video Search"</li> <li>• Yoohwan Kim (UNLV), "HTSMA: a Hybrid Temporal-Spatial Multi-Channel Assignment Scheme in Wireless Mesh Networks"</li> <li>• Jungwoo Ryoo (PSU Altoona), "Immersive Security Education Environment (I-SEE) Using Second Life"</li> <li>• Kang G. Shin (Univ. of Michigan), "Real-Time Computing and Networked System"</li> <li>• Jongwook Woo (Cal State LA), "e-Business architecture with Enterprise Search Engine"</li> <li>• Kyongil Yoon (College of Notre Dame of Maryland), "Background Subtraction Enhancement Using Segmentation"</li> </ul> <p>Student posters:</p> <ul style="list-style-type: none"> <li>• Seung Hoon Lee (UCLA), "Content Distribution in VANETs using Network Coding: The Effect of Disk I/O and Processing O/H"</li> <li>• Minwoo Park (Pennsylvania State University), "Lattice Detection of Urban View of Buildings"</li> <li>• Mira Yun (George Washington University), "Dynamic Channel-Assignment and Scheduling considering Channel Switching "</li> </ul>
06:00pm-07:00pm	<p>Participating Korean Organizations and Corporations: Overviews (light snack provided)</p> <ul style="list-style-type: none"> <li>• Overview of KUSCO, Jong-Hyun Rhie (KUSCO)</li> <li>• Overview of KSEA, Kyung D. Ryu</li> <li>• Overview of KOTRA, Miho Jon</li> <li>• Overview of Samsung, Yong Seok Heo (Raffle Draw)</li> </ul>
7:15pm-	<p>Dinner at Woo Lae Oak, a Korean-restaurant</p>

## October 26, 2008 (Sunday)

Date	Time	Program
Oct. 25 Saturday	08:00am- 08:45am	Breakfast
	08:45am- 09:30am	Keynote Speech 2 Moderator: SangHyuk Son (U. of Virginia) <ul style="list-style-type: none"> <li>Ashok Agrawala (Univ. of Maryland, College Park), "The Future of Information And it's Changing Role in Society"</li> </ul>
	09:30am- 10:30am	Invited Talk 4 - Security and Operating Systems Moderator: Jungwoo Ryoo (Penn State Univ., Altoona) <ol style="list-style-type: none"> <li>Jaeyeon Jung (Intel), "Privacy Scope---Preventing Sensitive Information Leaks Using Application-level Taint tracking"</li> <li>Taisook Han (KAIST), "Detecting Theft of Java Applications via Static Birthmarks"</li> <li>Kyung D. Ryu (IBM), "Runtime mutation of commodity OS Kernels Detecting Theft of Java Applications via Static Birthmarks"</li> </ol>
	10:30am- 10:45am	Coffee Break
	10:45am- 11:45am	Invited Talk 5 - Embedded Systems and Information Management Moderator: Jongwook Woo (California State Univ. LA) <ol style="list-style-type: none"> <li>Zohara Cohen (NIBIB/NIH), "Opportunities for Biomedical Computing and Informatics Research Funding at NIH"</li> <li>HeonYoung Yeom (Seoul National University), "What is there for us with embedded systems"</li> <li>Yoonsuck Choe (Texas A&amp;M), "Dissecting, Imaging, and Modeling of the Mouse Brain Network:</li> </ol>
	11:45am- 12:40pm	KOCSEA Annual Business Meeting <ul style="list-style-type: none"> <li>Overview (Jihie Kim, U. of Southern California)</li> <li>Election (Yoonsuck Choe, Texas A&amp;M)</li> <li>Finance (TaekJin Kwon, Telecordia)</li> <li>Webpage (EunYoung Kang, California State Univ. LA)</li> <li>Membership (Bongjun Ko, IBM and Jongwook Woo, California State Univ. LA)</li> <li>Scholarship (Jungwoo Ryoo, Penn State Altoona)</li> </ul>
	12:40pm- 01:50pm	Lunch
	01:50pm- 02:10pm	Closing

**1. Speaker: Prof. Ashok K. Agrawala (Univ. of Maryland) *The future of information and it's changing role in society***

*One of the major advances in the last couple of decades has been the ready availability of vast amounts of information to the citizens of the world for the asking. I believe that information is a key element for every aspect of our lives. However, we have a limited view of what information is and what its role is. In this talk we present some thoughts about the fundamental nature of information and its role to day and in the future in impacting the quality of life.*

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**2. Speaker: Prof. Yoonsuck Choe (Texas A&M) *Dissecting, Imaging, and Modeling of the Mouse Brain Network***

*Recent advances in serial-sectioning microscopy have enabled high-throughput imaging of massive volumes of biological microstructure at a very high resolution. One example is the Knife-Edge Scanning Microscope (KESM) we developed at Texas A&M, which is one of the few that combines serial sectioning and imaging in an integrated process. The KESM is capable of imaging biological tissue (about 1 cm<sup>3</sup>) at 300 nm x 300 nm x 500 nm resolution within 100 hours, generating data at a rate of 180 MB/s. The resulting data per organ (e.g., a mouse brain) can easily exceed tens of terabytes. Due to the massive amounts of data at multiple scales, morphological reconstruction algorithms that are fast, resource efficient, and accurate become necessary. We will present our latest results in large-scale microscopic neuronal circuit data acquisition in the mouse brain using KESM, and discuss the fast algorithms we developed for tracing and analyzing neuronal morphology. Finally, we will discuss computational and thoretical modeling of brain function in the context of the newly available brain network data.*

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**3. Speaker: Prof. Hyeong-Ah Choi (George Washington Univ.) *Resource Management in Next Generation Wireless and Mobile Networks***

*Next generation wireless and mobile networks will focus on the open wireless architecture platform. In such a network, heterogeneous wireless systems will be integrated to provide reliable, high-bandwidth, on-demand services with performance guarantees to a variety of users with diverse traffic characteristics, security requirement, and hardware capabilities. In this presentation, we will give an outlook over someof the key problems in resource management and sketch some potential solutions.*

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**4. Speaker: Prof. Young Bae Choi (James Madison Univ.) *Homeland Security: The Past, Present, and Future Trends***

*This presentation reviews the past, present, and future trends of Homeland Security. The research activities of relevant research organizations including the IIIA (Institute for Infrastructure and Information Assurance) of James Madison University and the Critical Infrastructure Protection Program of George Mason University are introduced. The annual Homeland Security Symposium and current technical trends based on the analysis of presented research papers will be identified. Outstanding and emerging research issues of Homeland Security will be proposed and discussed.*

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**5. Speaker: Prof. Soon Chung (Write State Univ.) *Role-Based Access Control for Grid Database Services Using the Community Authorization Service***

*In this presentation, we propose a role-based access control (RBAC) method for Grid database services in the Open Grid Services Architecture - Data Access and Integration (OGSA-DAI). OGSA-DAI is an efficient Grid-enabled middleware implementation of interfaces and services to access and control data sources and sinks. However, in OGSA-DAI, access control causes substantial administration overhead for resource providers in virtual organizations (VOs) because each of them has to manage a role-map file containing authorization information for individual Grid users. To solve this problem, we used the Community Authorization Service (CAS) provided by the Globus Toolkit to support the RBAC within the OGSA-DAI framework. The CAS grants the membership on VO roles to users. The resource providers then need to maintain only the mapping information from VO roles to local database roles in the role-map files, so that the number of*

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*entries in the role-map file is reduced dramatically. Furthermore, the resource providers control the granting of access privileges to the local roles. Thus, our access control method provides increased manageability for a large number of users and reduces day-to-day administration tasks of the resource providers, while they maintain the ultimate authority over their resources. Performance analysis shows that our method adds very little overhead to the existing security infrastructure of OGSA-DAI.*

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**6. Speaker: Dr. Zohara Cohen (National Institutes of Health) *Opportunities for Biomedical Computing and Informatics Research Funding at NIH***

*This talk will provide an overview of the opportunities for research funding in biomedical computing and informatics at NIH. The talk will begin with a broad introduction to the structure of the NIH structure and how it administers research grants. Information will be provided as to which Institutes and Centers of the NIH support biomedical computing and informatics. A major focus of the presentation will be the activities of several trans-NIH programs dedicated to supporting biomedical computing and informatics. These include the Biomedical Information Science and Technology Initiative (BISTI), the Inter-agency Modeling and Analysis Group (IMAG), the National Centers for Biomedical Computing (NCBC's), the Biotechnology Resource Centers program, and the Neuroimaging Informatics Tools and Resources Clearinghouse (NITRC). Particular attention will be paid to IMAG, including the relationship that has been forged between IMAG and the Korean modeling research community. Finally, some details will be provided on particular funding opportunity announcements for biomedical computing and informatics at the NIH.*

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**7. Speaker: Dr. Marie desJardins (University of Maryland) *Networks Presenting Your Research: Papers, Presentations, and People***

*In order to be a successful computer science researcher, having good ideas isn't enough. You also need to be able to present those ideas effectively through scientific publications, public presentations, and interactions with individual colleagues. In this talk, I will give some advice for young researchers on how to present your research effectively, and what skills you need to develop in order to be successful at this aspect of doing research. In the spirit of presenting my own research, I will also briefly describe some of the research efforts I am leading in the MAPLE Laboratory at UMBC, in the areas of machine learning, AI planning, and multi-agent systems.*

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**8. Speaker: Dr. Douglas H. Fisher (Program Director, National Science Foundation) *An Overview of Selected Programs at the National Science Foundation***

*I will present an overview of selected programs, initiatives, and opportunities from CISE, the NSF Office of International Science and Engineering (OISE), and cross-cutting programs at NSF.*

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**9. Speaker: Dr. In Tark Han (ETRI, Korea) *A proposal for R&D cooperation between KOCSEA and ETRI - a process for collaborative project***

- (1) the process to generate a R&D project - governmental viewpoint,*
  - (2) the process for international collaborative project in ETRI,*
  - (3) the representative R&D projects in the IT Convergence Research Laboratory, one of four laboratories of ETRI.*
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**10. Speaker: Prof. Taisook Han (KAIST, Korea) *Detecting Theft of Java Applications via Static Birthmarks***

*A software birthmark means the inherent characteristics of a program that can be used to identify the program. A comparison of such birthmarks facilitates the detection of software theft. In this presentation, we examine a static Java birthmark based on weighted stack patterns, a static API trace birthmark, a static instruction trace birthmark, and a static birthmark based on control flow edges, which reflect the characteristic of Java applications. We evaluate the proposed birthmarks with respect to two properties required for a birthmark: credibility and resilience. We will show the empirical results and compare the proposed birthmarks with existing birthmarks, such as that of Tamada et al. and the k-gram birthmark. We will suggest "wishful" applications of birthmarks such as reliable evidence of software theft when the software is modified by someone other than author.*

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**11. Speaker: Prof. Jeff Hollingsworth (Univ. of Maryland, College Park) *Towards Automated Tuning of Parallel Programs***

*Getting parallel programs to run well is a difficult, tedious, and time consuming task. In this talk I will present a system called Active Harmony that supports automated tuning of parallel programs. I will explain how Active Harmony can be used to automatically tune runtime parameters, and how it can be used to drive compiler optimizations. I will also present some performance results that show Harmony's auto tuning providing better results than manual efforts, and similar performance to exhaustive search of the parameter space.*

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**12. Speaker: Dr. Jaeyeon Jung (Intel) *Privacy Scope---Preventing Sensitive Information Leaks Using Application-level Taint tracking***

*Users blindly trust commercial off-the-shelf (COTS) applications to act responsibly with respect to their private information. However, many incidents (e.g., Sony DRM players installing a rootkit) suggest that these COTS applications intentionally or inadvertently collect a user's personal data and even share them with third parties. In this talk, I present a tool and techniques that track how sensitive data are accessed and processed by applications and detect their leaks to the network. Our tool, Privacy Scope, uses the Intel's Pin binary rewriting tool to pinpoint leaking code and source agnostic to encryption and traffic randomization. I conclude the talk with technical challenges to reduce the performance overhead of taint-tracking, making Privacy Scope practical for everyday use.*

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**13. Speaker: Dr. Dong-In Kang (USC, ISI) *Intelligent Run-time Resource Management Techniques for Large Multi-Core Architectures***

*As multi-core architectures become prevalent, increasing numbers of on-chip processing resources are becoming available for use by applications. In order to obtain high efficiency, multiple applications will be mapped to these processors and will share their computational resources. Further, the resource requirements of future, dynamic applications may vary over time depending on the current characteristics of the environment. To obtain high performance of the applications and to support dynamic use of the resources, efficient run-time resource management will be required. In this talk, we present an intelligent adaptive run-time application mapping technique on a multi-core architecture. Our approach uses run-time profiling techniques to extract knowledge of an application and to refine its mapping for higher performance at run-time. We focused on optimizing the end-to-end latency of an application. Two algorithms, a hot-spot remover algorithm and a genetic algorithm, are used to improve application mapping at run-time. Those algorithms are augmented with run-time knowledge to demonstrate the workings of our approach. The behavior and the performance improvement of those algorithms using run-time knowledge are presented.*

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**14. Speaker: Dr. Anya Kim (Naval Research Lab) *The Comprehensive Maritime Awareness (CMA) system***

*The Comprehensive Maritime Awareness (CMA) system tries to identify possible threats in the global maritime domain that can impact the safety, security, economy, or well-being of the United States. In this system, military, law enforcement, and allies need to work together and share necessary information. This information is gathered from multiple nations and agencies and may all require different security policies. Therefore, the data has to be well separated and access to it mediated. For this purpose, we developed a security architecture and mechanisms using Oracle label security, and web service security standards such as SAML, XACML. We present the architecture focusing on the federated identity management aspect and how it applies to situational maritime awareness.*

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**15. Speaker: Dr. Bongjun Ko (IBM) *Blind Estimation of Transmit-Power in Wireless Networks***

*We present recent results on blind estimation of transmission power of a wireless node based on received power measurements. Specifically, the setup consists of a set of monitors that measure the signal power received from the transmitter, and the goal is to utilize these measurements to estimate the transmission power in the absence of any prior knowledge of the transmitter's location or any statistical distribution of its power. Towards this end, we exploit spatial diversity in received-power measurements and cooperation among the multiple monitoring nodes; based on theoretical analysis we obtain the Maximum Likelihood (ML) estimate, derive fundamental geometrical insights and show that its asymptotic optimality.*

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**16. Speaker: Dr. Taek Jin Kwon (Telcordia) *Data dissemination in vehicular communication networks (VANET)***

*Vehicular communications have been considered to be an enabler for numerous vehicle safety and information applications. Many automobile manufacturers are in different stages of integrating communication devices in their vehicles for the purpose of safety, assisted driving, entertainment, and mobile commerce. As increasing number of vehicles start getting equipped with communication capability, large scale ad-hoc networks can be envisioned in the foreseeable future. In this talk, we will go over recent results in VANET data dissemination. This talk summarizes the data dissemination methods in three broad categories: geocast/broadcast, multicast, and unicast approaches; and describe key ideas of representative technologies in each category. In addition, we consider location service and security issues that are crucial for data dissemination in VANET. We conclude by sharing our thoughts on further challenges.*

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**17. Speaker: Prof. Dongwon Lee (Penn State Univ.) *Novel Data Linkage Techniques***

*Since modern data applications increasingly need to do deal with dirty data due to a variety of reasons (e.g., data entry errors, heterogeneous formats, or ambiguous terms), considerable recent efforts have focused on the Data Linkage problem to determine if two entities in a collection are approximately the same or not. Toward this problem, in this talk, I will describe a few novel solutions being developed at Penn State such as: (1) group-based data linkage, (2) Biology-based data linkage, and (3) Web-based data linkage techniques. The talk will be based on the materials from recent publications at ICDM 06, ICDE 07, CIKM 07, CIVR 08, and WebDB 08, etc.*

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**18. Speaker: Prof. Insup Lee (Univ. of Pennsylvania) *Compositional Analysis Techniques and Cyber Physical Systems***

*Real-Time Embedded Systems (RTES) consist of a collection of components that interact with each other and with their environment through sensors and actuators. Embedded systems are built into physical computing systems such as aircraft, automobiles, medical devices, robots, and consumer electronics. As embedded systems become more complex, component-based technologies are becoming an essential alternative to traditional monolithic design approaches. The main advantage of a component-based technology is that complexity can be effectively managed by encapsulating large system modules within a component. Each component exposes an interface that abstracts and hides component details and complexities. Component interface allows a component to be composed with other components. While designing of individual components is well understood, the integration and interoperability of components present challenges in adopting the framework. One essential challenge is to support compositionality, which means that the properties of a system can be determined from the properties of its components. We have been developing a hierarchical, resource-based framework for RTES using components. One salient aspect is compositional schedulability analysis techniques for RTES, based on the assume-guarantee reasoning of formal methods. I will describe various resource demand models, resource supply models, and compositional analysis methods, and applications*  
*In the second part, I will talk about Cyber Physical Systems (CPS). CPS are to meet the needs of the new generation of engineered systems that are highly dependable, efficiently produced and certified, and capable of advanced performance in computation, communication, and control. The Internet transformed how we interact and communicate with one another and also revolutionized how and where we access information. We believe that CPS will transform how we interact with and control the physical world around us. I will describe the opportunities and challenges of CPS.*

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**19. Speaker: Dr. Kang-Won Lee (IBM) *Networking Research in the International Technology Alliance: Enabling Accurate Node Control in Randomized Duty Cycling Networks***

*In this presentation, I introduce the exciting new research program, called ITA (International Technology Alliance for Network and Information Science) funded jointly by the U.S. and the U.K. government in the area of wireless network, security, and information science. I then present a research result from the program related to energy-aware sensor network management. In particular, we have proposed a duty-cycling algorithm for a large-scale dense wireless sensor networks. The proposed algorithm is based on a social behavior of nodes in the sense that individual node's sleep/wakeup decision is influenced by the state of its neighbors. We analyze the behavior of the proposed algorithm using a stochastic spatial process. We then identify a set of parameters for a reversible spatial process model, and study the steady state of the network with respect to these parameters. We report that this algorithm is scalable to a large network, and can effectively control the active node density while achieving a small variance. We also report that the social behavior of nodes has interesting and non-obvious impacts on the performance of duty cycling. Finally, we present how to set the parameters of the algorithm to obtain a desirable duty cycling behavior.*

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**20. Speaker: Dr. Kyung Dong Ryu (IBM) *Runtime mutation of commodity OS Kernels***

*Continuously running systems require kernel software updates applied to them without downtime. Facilitating fast reboots, or delaying an update may not be a suitable solution in many environments, especially in pay-per-use high performance computing clusters and mission critical systems. Such systems will not reap the benefits of new kernel features, and will continue to operate with kernel security holes unpatched, at least until the next scheduled maintenance downtime. To address these problems we developed an on-the-fly kernel updating system that enables commodity operating systems to gain adaptive and mutative capabilities without kernel recompilation or reboot. Our system, DynAMOS, employs a novel and efficient dynamic code instrumentation technique termed adaptive function cloning. Execution flow can be switched adaptively among multiple editions of functions, possibly concurrently running. This approach becomes the foundation for dynamic replacement of non-quiescent kernel subsystems when the timeliness of an update depends on synchronization of multiple kernel paths. We illustrate our experience by dynamically updating core subsystems of the Linux kernel.*

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**21. Speaker: Prof. Sang H. Son (Univ. of Virginia) *Data Integration for Situation Awareness***

*The computing systems are becoming deeply embedded into ordinary life and interact with physical processes and events. They monitor the physical world with sensors and provide appropriate reaction. This cyber-physical interaction, which occurs through ubiquitous embedded sensor networks, has the potential to transform how humans interact with and control the physical world. In this talk, we will discuss some of the research issues in providing timely and accurate event detection for situation awareness in ubiquitous embedded systems, and present our approaches to addressing those issues.*

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**22. Speaker: Prof. Eunjee Song (Baylor Univ.) *A Rigorous Approach to Incorporating Access Control Features into Applications***

*Access control features are often spread across and tangled with other functionality in a design. This makes understanding, analyzing, and modifying these features in a design difficult. Aspect-oriented modeling (AOM) techniques can be used to support separation of access control concerns from other application design concerns. However, composition of an aspect and primary models yields a design model in which access control features are integrated with other application features. In this talk, we present an AOM approach that supports verifiable composition of behaviors specified in access control aspect models and primary models. Given an aspect model, a primary model, and a specified property, the composition technique produces proof obligations as the behavioral descriptions in the aspect and primary models are composed. One has to discharge the proof obligations to establish that the composed model has the specified property.*

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**23. Speaker: Prof. Heonyoung Yeom (Seoul National University, Korea) *What is there for us with embedded systems?***

*There are a lot of embedded systems in use these days, from cell phones to disk based video recording devices and digital TVs. Most of these systems are using some processor like ARM or PowerPC and based on linux like operating system. Aside from the general issues regarding these embedded systems, there are some specific issues when there are some hardwares involved such as flash memory or hard disk drives. I will briefly look at the general embedded system issues and get to the detailed issues with embedded storage devices.*

**1. Poster Presenter: Prof. Yoonsuck Choe (Texas A&M) *Internal State Predictability as an Evolutionary Precursor of Self-Awareness and Agency***

*What is the evolutionary value of self-awareness and agency in intelligent agents? One way to make this problem tractable is to think about the necessary conditions that lay the foundation for the emergence of agency, and assess their evolutionary origin. We postulate that one such requirement is the predictability of the internal state trajectory. A distinct property of one's own actions compared to someone else's is that one's own is highly predictable, and this gives the sense of "authorship". In order to investigate if internal state predictability has any evolutionary value, we evolved sensorimotor control agents driven by a recurrent neural network in a 2D pole-balancing task. The hidden layer activity of the network was viewed as the internal state of an agent, and the predictability of its trajectory was measured. We took agents exhibiting equal levels of performance during evolutionary trials, and grouped them into those with high or low internal state predictability (ISP). The high-ISP group showed better performance than the low-ISP group in novel tasks with substantially harder initial conditions. These results indicate that regularity or predictability of neural activity in internal dynamics of agents can have a positive impact on fitness, and, in turn, can help us better understand the evolutionary role of self-awareness and agency.*

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**2. Poster Presenter: Prof. Byung Choi (Michigan Tech. Univ.) *Dynamic Membership Protocol for Epidemic Protocols***

*Epidemic protocols have two fundamental assumptions. One is the availability of a mechanism that provides each node with a set of  $\log(N)$  (fanout) nodes to gossip with at each cycle. The other is that the network size  $N$  is known to all member nodes. While it may be trivial to support these assumptions in small systems, it is a challenge to realize them in large open dynamic systems, such as peer-to-peer (P2P) systems. This work introduces one possible solution which addresses both problems; providing at each cycle a different set of  $\log(N)$  nodes selected randomly and uniformly from the entire network under churn, and estimating the dynamic network size in the number of nodes.*

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**3. Poster Presenter: Prof. Eun-Young Kang (Cal State LA) *Integrated Training Pipeline for Scientific Visualization***

*Integrated Training Pipeline for Scientific Visualization (ITPSV, or SV for >short) is a student centered research and training program, organized on the public science education projects in cosmology. The poster introduces computer simulation, animation and game projects developed and implemented via this program.*

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**4. Poster Presenter: Prof. Jihie Kim (USC) *Sentiment Analysis of a Student Q&A Board for Computer Science***

*Online discussion boards are widely used in higher education, extending the availability of instructors, assistants, and materials to students beyond the traditional classroom. Students' emotions and attitudes are discernible in messages posted to online question and answer boards. Understanding student sentiments could help instructors identify students with low confidence or high frustration, optimize help-seeking, and potentially improve performance. Towards this end, we present a set emotional speech acts that were used by students in a university-level computer science course to express certainty and uncertainty, frustration, tension and politeness. Using these new labels, we coded a corpus of almost 1200 messages and analyzed the results of annotated corpus. The work has application in computational discourse analysis and in building student help-seeking models for distance learning. This study complements previous work on analyzing student discussions using rhetorical speech acts, course topics, and problem tasks.*

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**5. Poster Presenter: Prof. Seon Ho Kim (U of the District of Columbia) *Viewable Scene Modeling for Geospatial Video Search***

*Video sensors are becoming ubiquitous and the volume of captured video material is very large. Therefore, tools for searching video databases are indispensable. Current techniques that extract features purely based on the visual signals of a video are struggling to achieve good results. By considering video related meta-information, more relevant and precisely delimited search results can be obtained. In this study we propose a novel approach for querying videos based on the notion that the geographical location of the captured scene in addition to the location of a camera can provide valuable information and may be used as a search criterion in many applications. This study provides an estimation model of the viewable area of a scene for indexing and searching and reports on a prototype implementation. Among our objectives is to stimulate a discussion of these topics in the research community as information fusion of different georeferenced data sources is becoming increasingly important. Initial results illustrate the feasibility of the proposed approach.*

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**6. Poster Presenter: Prof. Yoohwan Kim (UNLV) *HTSMA: a Hybrid Temporal-Spatial Multi-Channel Assignment Scheme in Wireless Mesh Networks***

*A number of multi-channel assignment schemes have recently been proposed to improve the throughput of IEEE 802.11-based multi-hop wireless mesh networks (WMNs) by utilizing multiple channels. However, excessive system overhead and/or waste of bandwidth has prohibited achieving high network throughput. We propose a synchronization-free, hybrid temporal-spatial multi-channel assignment scheme in a tree-based network topology, using a single radio for each host. The gateway uses all the available channels in a round-robin fashion over time, and the scheme ensures fair access to the gateway by all hosts. The channel assignment for the non-gateway hosts is based on the geographical location and channel availability (a spatial approach). Adjacent regions have their own unique channels, and a channel can be reused in remote regions without an interference. Simulation results have shown that the network throughput is increased by as much as 20.84%, and the packet completion latency is reduced by 44.02%.*

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**7. Poster Presenter: Mr. Seung Hoon Lee (UCLA) *Content Distribution in VANETs using Network Coding: The Effect of Disk I/O and Processing O/H***

*Content distribution in vehicular networks poses a great challenge due to network dynamics and high speed mobility. In recent years, network coding has been shown to efficiently support distribution of content in such dynamic environments, thereby considerably enhancing the performance. However, the related work in the literature has mostly focused on theoretic or algorithmic aspects of network coding. In this paper, we provide an in-depth analysis on the implementation issues of network coding in wireless networks. First, we develop an abstract model of a general network coding process and evaluate the validity of the model via several experiments on real systems. Second, we propose schemes that considerably improve the performance of network coding under resource constrained environments. We implement our overhead model in a network simulator and evaluate these schemes in a large scale vehicular network.*

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**8. Poster Presenter: Mr. Minwoo Park (Pennsylvania State University) *Lattice Detection of Urban View of Buildings***

*A novel and robust computational framework for automatic detection of 2D lattice in urban view is presented. 2D crystallographic group theory provides a theoretical justification of degree-4 Markov Random Field (MRF) for detecting lattice. The lattice units are proposed through unsupervised clustering of interest points and voting for consistent lattice units. The proposed lattice basis vectors and pattern element contribute to the pair-wise compatibility and joint compatibility functions in a degree-4 MRF. This allows us to formulate lattice detection as an optimization problem, solved within the MRF using Belief Propagation. Results demonstrate significant advances over the state-of-the-art algorithm.*

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**9. Poster Presenter: Prof. Jungwoo Ryoo (PSU Altoona)**

*Immersive Security Education Environment (I-SEE) Using Second Life*

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**10. Poster Presenter: Prof. Jongwook Woo (Cal State LA) *e-Business architecture with Enterprise Search Engine***

*e-Business has replaced dramatically or occupied the major part of the traditional markets for the past 10 years. The e-Business architecture moved from the legacy client-server architecture to n-tier architecture since Internet and Web came out to the world. Internet and web even create new product and revenue as companies have invested in Information Technology seriously not as an option. Content business is one of the examples in this new era. Content has become intellectual property and a company or organization that has content can make profit by providing the content to the customers and the users. As the content increases high, there is a need for search engine in order to provide the proper content to the user quickly. Thus, search engine has received highlight in the content industry, mostly portal sites. The paper introduces search engine - especially internal search engine not web search engine - and its fundamentals. Then, the paper proposes the e-Business architecture with search engine.*

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**11. Poster Presenter: Prof. Kyongil Yoon (College of Notre Dame of Maryland) *Background Subtraction Enhancement Using Segmentation***

*The capability of extracting moving objects from a video sequence captured using a static camera is a typical first step in visual surveillance. This procedure is called a background subtraction (BGS), and it uses the temporal distribution of pixel values over the sequence of frames. Pixel based BGS can be improved by considering the spatial coherence around each pixel, and in this paper we present a method to enhance existing BGS methods using spatial information from image segmentation.*

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**12. Poster Presenter: Ms. Mira Yun (George Washington University) *Dynamic Channel-Assignment and Scheduling considering Channel Switching Overhead in Wireless Mesh Networks***

*Despite the vast amount of research efforts in developing efficient channel assignment and scheduling algorithms in multi-channel multi-radio WMNs, none of them considers the overhead incurred from switching radios dynamically from one channel to another into account. In a 802.11 card, the hardware switching delay is typically in the order of a few hundreds of microseconds to a few milliseconds, and the switching between two different bands (e.g., 5GHz for 802.11a and 2.4GHz for 802.11b/g) may result in even a larger delay. In this poster, we take the switching delay into account in the design of channel assignment and scheduling and present two algorithms: a centralized one and a fully distributed one. The performance of our proposed algorithms is analyzed using a discrete-event simulator that we developed. The simulation results show that the network throughput and the end-to-end delay can be significantly improved using our algorithms. Some theoretical issues are also addressed.*

## Local Information

### Recommended Hotel

Sheraton Premiere at Tysons Corner  
Address: 8661 Leesburg Pike,  
Vienna, VA 22182 United States  
T: (703) 448-1234

### Direction from the Hotel (A) to KUSCO building (B)

1. Head southeast on Leesburg Pike toward Ashgrove Ln 0.1 mi
  2. Turn left at Westwood Center Dr 79 ft
  3. Turn right at Leesburg Pike/VA-7 1.3 mi
  4. Turn right at Gallows Rd 0.3 mi
- Destination will be on the right

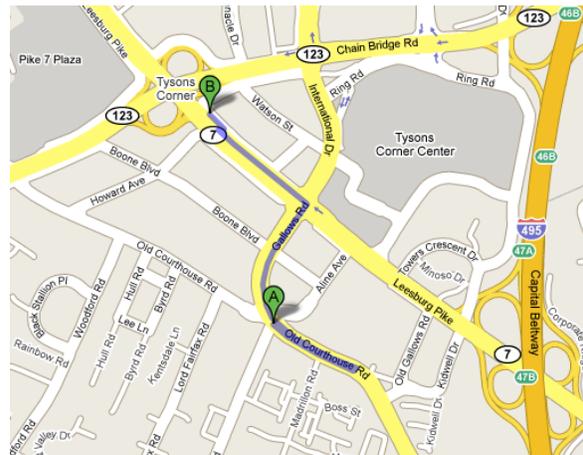


### Banquet Restaurant

우래옥 Woo Lae Oak  
Address: 8240 Leesburg Pike,  
Vienna, VA 22182  
T: (703) 827-7300

### Direction from the KUSCO building (A) to Woo Lae Oak (B)

1. Head southeast on Gallows Rd/Old Courthouse Rd toward Madrillon Rd 0.2 mi
  2. Make a U-turn, Continue to follow Gallows Rd 0.5 mi
  3. Turn left at Leesburg Pike/VA-7 0.2 mi
  4. Turn right toward Leesburg Pike 62 ft
- Destination will be on the right



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